The same may be said of the Pacific in its eastern part, where alone the trades are regular. In the Western Pacific, as well as in the Western Indian Ocean, I admit that air from the northern hemisphere reaches to the equator and somewhat beyond in January, but not that this tends to give the equator a lower temperature in this month than in July. According to Dove, the mean temperature of 10° N. in January is 77°·2; of 10° S. in July, 76°·1.

So far as the temperature of the equator is concerned, the southern is the dominant hemisphere, and the equator is certainly cooled by winds coming from the south. If the equator is not everywhere warmer in January than in July, this is caused by the rainy season, which on the equator, and even a few degrees north of it, generally coincides with the southern summer. Where the rains are not very heavy, as, for example, on the Isle of St. Thomas, West Africa, we have: January, 78° 3; July, 75°·7; at Padang, Sumatra, where the rains are exceedingly heavy all the year, there is scarcely any difference at all between the months. Somewhat to the south of the equator, where to the difference in the nearness of the sun is added a much greater height above the horizon in January, we have—

	Jan.	July.	Rainy Season.
Amboina, Molucca Islands, 4° S.	80·9	77·4	May to August.
Batavia, Java, 6° S.... ...	77·7	78·8	December to February.
Pernambuco, Brazil, 8° S.	80·6	75·0	April to July.

so, by the first-rate observations of Batavia, it is established that, so far as 6° S., January is 1°·1 colder than July, because the former is very rainy, while the latter has little rain. Even to 9° lat. N., July is colder than January, if the former has much more rain, so for example—

	°	°	
Island of Fernando Po, W. Africa, 4° N.	79·9	76·5	March to November.
Gondokoro, Upper Nile, 5° N.	81·3	75·7	April to August.
Freetown, W. Africa, 8½° N.	80·4	77·0	June to October.

Thus, in the lowest latitudes of the northern hemisphere, we find differences amounting to 5°·6, while in the southern greater differences than 1°·1 are not known, which may, to a certain degree, be ascribed to the nearness of the sun in January.

I think I have proved that, as to what we call the temperature of the air (really that of the lowest stratum), it is, on the equator and a few degrees north and south from it, far more influenced by the yearly distribution of clouds and rain than by the different amount of heat received from the sun. The result would be different if we knew the temperature of the whole stratum of air. The heating of the upper surface of the clouds by the sun, and especially the heat liberated in the condensation of water must give to the higher strata a superior temperature than that they had in the dry season; in other words, the decrease of temperature with elevation is much slower during the rains than in the dry season, as was shown for India by Mr. Blanford. This is true for other regions, and where the sky is cloudy and rains abundant in the greater part of the year, the temperature of the whole air may yet be higher than in drier climates, where the soil and the lower stratum of air are hotter.

I do not agree with Mr. Croll in what he states at the end of his letter as to the effect of winds in cooling the equatorial regions and rendering them habitable, as they would be too hot for man without the cool air brought from the temperate regions. I think Mr. Croll has enormou ly over-stated the effects of winds on the temperature of the equator. The extent of the tropical zone is so great, its temperature so very near to that of the equator, the winds which blow across it so gentle, that I consider the effect of the winds from the temperate regions in directly cooling the temperature of the equator to be nearly imperceptible. The following is a good illustration:—Nowhere is the winter temperature so low near the tropics as in Southern China, for example, in January, Canton, 55°·6, Victoria, Hong-Kong, 59°·2. Yet Saigon, in Cochin China, but 11° to the south of Hong-Kong, and subjected to the full force of the north-east monsoon from the China seas, has a January temperature above 77°. Clearly the thermal effect even of the cold winter monsoon is scarcely perceptible farther south.

I consider water to be the only direct cause of the mildness and uniformity of equatorial temperatures, and this in three ways—(1) by the great heat-capacity of water; (2) by the clouds which interpose a screen between the sun and the surface of the earth; (3) by the evaporation of rain water by the soil and plants.

The first cause is especially powerful on the ocean, while the two latter act especially on land, even very far from the sea. If it was not for the clouds and evaporation, how could we explain, for example, the absence of great heat (hottest month, 78°·6) at Iquitos, on the Amazons, 4° S., and more than 1,000 miles from the Atlantic, where the winds are generally weak?

As to the winds, I admit of their effect in this case; but (1) in causing ocean-currents, and thus removing the heated water from the equator; (2) in spreading the cold air from over the cold currents over a greater distance. The latter is the cause of the low temperature in the equatorial regions of the Eastern Atlantic and Eastern Pacific.

Where the sky is clear and humidity and rains deficient, very high temperatures of the air are attained, even at a great distance from the equator (10°–30°) and this notwithstanding winds of considerable force blowing from cooler regions. So, for example, the north winds blowing in the summer in the Sahara, and coming from the cooler Mediterranean, are certainly stronger than the trades of the ocean and yet do not prevent the desert from attaining a higher temperature than known in any equatorial region.

In the same number of NATURE you committed an error by giving the dates of freezing of the Neva in *old style*. The dates in *new style* are: Mean day of freezing, November 25, earliest October 28 (1805), latest (not quite certain), January 9 (1711), next latest December 26 (1826); mean day of opening, April 21, earliest, March 18 (1822), latest, May 12 (1810); number of days open, 218, least, 172 (1852), greatest, 279 (1822).

A. WOEIKOF

Sèkpaleruaya 8, St. Petersburg, December 5-17, 1879

Hearing through the Mouth

THE principle of the so called "Audiphone," described in NATURE, vol. xxi. p. 243, is by no means a new discovery, although the application of it may be novel. It has long been known that sounds may be conveyed to the auditory nerves through the mouth when the drum of the ear is defective in its action, although the principle has, perhaps, been little acted upon by aurists. Mr. Rhodes's system is to press the edge of a vibrating metal disk against the upper teeth, and "the vibrations thus taken up by the disk are transmitted through the teeth and bones of the skull to the auditory nerve." (?) Such a remedy will, in many cases, be thought more inconvenient than the defect, and it is by no means necessary thus to jar the teeth and the bones. Although I am not deaf, some years ago I practised the listening to very feeble sounds through the mouth instead of by the outward ear, at the recommendation of the late Sir Charles Wheatstone. The inducing cause was to verify by experiment the true character and the notes of resultant tones, or Tartini's tones, about which no two authors had agreed. Sir Charles lent me one of his symphoniums—little instruments made like his concertinas, except that they were blown by the mouth directly upon the metal springs instead of by bellows. According to his directions I stopped my ears lightly with cotton, but pressed it into the *concha* with a thumb upon the lip of each ear. The little instrument was supported by my third and fourth fingers, leaving the notes to be touched by the first and second fingers of each hand. By thus excluding external sounds I could hear the deep and soft resultant tones to perfection; the instrument should not be tempered because they result from coincident vibrations of the notes sounded above. In these experiments I touched the symphonium as lightly as possible with elongated lips, the cavity of the mouth receiving the sounds. The teeth were covered by the lips.

WM. CHAPPELL

Strafford Lodge, Oatlands Park

Intellect in Brutes

THE numbers of NATURE containing the interesting discussion on this subject have only lately reached us, and it is late to bring forward anything on the question, yet the readers of NATURE will be interested in two instances of "calculation" on the part of wild birds that I have noticed. Some years ago I was overlooking a penguin "rookery" as it is called, at the Falklands, and watching the goings on of the numerous colony below me. It was breeding season, and the birds were sitting on their eggs on

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the bare earth, crowded together with hardly walking room between them. Amongst the birds stepped a pretty Sheath-bill (*Chionis alba*) with a quiet jaunty stride, picking what he could, and apparently perfectly indifferent to the motions of the penguins, who drove at him with their beaks as he passed, but never struck him. I saw him pass and repass one bird always just out of reach, till the bird could stand it no longer, but reached off her nest about an inch to strike him; he was still just out of reach and busy with something, apparently not noticing the penguin; she reached further, he crossed her again, still just out of reach, and this went on till he had drawn her about two feet from the nest, then in one stride he was beside the egg, had punched a hole, and was sipping the contents before the slow penguin could turn and hop back to save it; he again led her away by the same manœuvre and increased the hole and got a greater part; a third time he led her off and was eating the egg when he was driven right away by another penguin, who was wandering at liberty, the mate, I suppose, being on turn on the egg. The proceeding on the part of the sheath-bill was a perfect trap for the poor foolish old penguin.

The other instance I will give occurred in the Pacific, where some albatross were circling about, and frequently settling on the water in flocks; some sharks were about, and I watched to see if any albatross would be pulled down; then I noticed a cordon of sentries round the flock, who were relieved at times from the flock, a single bird going out and sitting near the sentry who flew in. Whenever a shark's fin approached the sentry he flew in, and the whole flock took up new position. Here was distinct organisation. The ship was going very slowly through the water, and I was able to study the whole carefully. J. P. Maclear

H.M.S. *Alert*, Straits of Magellan, November 5, 1879

The following account of an incident in the early life of a South African baboon may not be out of place in your journal The person who witnessed it was a very trustworthy native attached to Bishopstowe, Natal, and who is employed from time to time to get game for the house. He used to find it an agreeable addition to this duty to collect objects of natural history for the cabinet as well as for the table. He was fully alive to, and took a keen interest in, what went on among the animals of all kinds, and was much struck with what he saw take place one day at the bottom of a little *iDonga*, or dry watercourse, over the brink of which he peeped, on the slope of a table-mountain, the grand object that lies in the front of Bishopstowe, some twelve miles distant.

It was a hot day, and a number of baboons were sunning themselves along the bottom of the *iDonga*. They lay upon their backs, with half-closed eyes, rubbing their stomachs in a state of placid enjoyment. Two or three young baboons had wandered to a little distance down the *iDonga*, searching for scorpions from stone to stone just below them. They were not very successful, and it did not appear that their movements were of much concern to their elders. Presently, however, one of the young ones, turning up a stone, lit upon a particularly fine and fat scorpion, which, with a furtive glance round at his elders, he seized and popped into his mouth, having first pinched off the sting. He at once proceeded to turn the stone over again with great assiduity, as though in further unsuccessful search for scorpions. He had not escaped notice, however, for down the gully in a sluggish roll came a great baboon, who seized the young one by the scruff of the neck, shaking him vigorously until the plump morsel dropped from his pouch. Having gobbled this up, the elder baboon at once regained his lounge, and all went on as before in the sleepy hollow.

London, January 8 Francis E. Colenso

Notes on the Papuans of Maclay Coast, New Guinea

The articles on the above subject which have appeared in Nature, vol. xxi. pp. 204, 226, have been read by me with great interest in consequence of the resemblance which certain of the customs therein described have to some which have come under my observation among the inhabitants of the Andaman and Nicobar Islands.

With regard to the custom of the relatives of deceased persons in the Andamans ornamenting and carrying about the skulls of the departed, which is alluded to in a note on p. 205, I believe I may claim to have first described and figured such a skull. My paper entitled "On a Visit to the Andamanese Home, Port Blair, Andaman Islands" (of which I inclose a copy), was published in the *Proceedings* of the Royal Irish Academy for 1871. In it I mentioned, together with some other facts, that I had witnessed the process of making flakes from a piece of bottle-glass which I saw subsequently employed for shaving.

An Andamanese necklace made of human clavicles and turtles' ribs is now in my possession, and I believe human finger and toe bones are also sometimes strung together and worn round the neck. In reference to the ideograph discovered by Mr. Maclay among the Papuans I would refer to a paper "On Nicobarese Hieroglyphics or Picture Writing," which I communicated to the pages of the *Indian Antiquary* (Bombay) in the year 1875.

The screen which is figured is one out of many which I saw in the Nicobar Islands. It consists of the spathe of a palm and is covered with representations, done in vermilion, of men (in various attitudes), pigs, fish, houses, canoes, weapons, &c., &c. It would take up too much space to give details of it here, but I may state that my conclusion regarding it was that it was the pictorial record of some past event. Both skull and screen are described, but unfortunately not figured, in my recently-published work, "Jungle Life in India."

To any of your readers who may be specially interested in the matter I shall be happy to forward, on application, copies of the papers above mentioned and photographs of the screen so far as the numbers available for the purpose will go. V. Ball

37, Northumberland Road, Dublin, January 9

The Word "Telegraph"

The word "telegraph" appears to have been naturalised in our language at a much earlier date than that given by Mr. Warren de la Rue in his letter in Nature, vol. xxi. p. 226. There are several references to the apparatus in the *Gentleman's Magazine* for July, December, 1794, and the next three volumes. At first the word appears in its French form with the final "e," but the sign of its foreign origin soon disappears. Under the date January 28, 1796, we find amongst "Domestic Occurrences" a paragraph stating that "a telegraph was this day erected over the Admiralty." This, I think, was removed about thirty years ago. In case your correspondent should wish to verify the references in the indexes to the *Gentleman's Magazine*, I may point out that there are two pages numbered 106 in the volume for January to June, 1795, and that there is an article at p. 1176 of that for July to December, 1794, not mentioned in the index.

Watt, in his "Bibliotheca Britannica," gives a still earlier reference to the word in R. H. Gower's "Theory and Practice of Seamanship," but there is no mention of a telegraph in the first edition of that work, published in 1793.

The word occurs many times in Dr. Thos. Young's "Lectures on Natural Philosophy," 1807, and some interesting information on the subject may be found in Gregory's "Treatise of Mechanics" (2nd ed), vol. ii. p. 434 (London, 1807), where several sorts of telegraphs are described.

H.M. Patent Office, January 12 Richard B. Prosser

Stags' Horns

Though, no doubt, as Mr. Stokoe suggests, many antlers are picked up and sold to knife-handle makers, or, if they happen to be good ones, used for "making up" deers' heads, yet many, I believe, are really eaten by the deer themselves. I have never myself seen a deer engaged in eating a fallen antler, nor, though I have more than once found cast horns on the hills, did the latter present any appearance of having been gnawed.

All the hill men will tell you, however, that it is a well-known fact that red-deer eat the horns that are shed every year, and the late Sir Thomas Moncreiffe once told me that he watched a hind —a cervine Delilah—gnawing the tips of the tines of the horns of a stag that was lying beside her, and which he afterwards shot. In Blair Castle there is a magnificent stuffed stag—"Tilt"—which was reared by the late Duke of Athole, who fed it upon, amongst other things, ground deer-horns. As tame stags often do, "Tilt" became dangerous, and had to be killed when he was eight or nine years old. In size he far surpassed any of the wild red-deer, and had most magnificent antlers. As each year's antlers fell off they were preserved, and form an interesting and instructive series.

Considering how fond cows are of gnawing bones, and also how they will eat any woollen garment they can get at, there does not seem to be anything very remarkable in the fact of red deer consuming shed horns. F. Buchanan White

Perth, January 2

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